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Applicant adds new claims 23-24. Claims 1-24 are pending in the present application. Applicant amends claims 9 and 15 to independent form. Applicant amends claims 6, 12-13, and 18 for clarification and add new claims 23 and 24 to round out the scope of the claimed invention. Applicant refers to Figs. 3-5 and 9-11 and their corresponding description in the specification—including page 11, line 13 to page 12, line 4, page 23, lines 5-20, page 26, lines 14-23, page 30, lines 7-13, and page 31, lines 18-23—for exemplary embodiments of and support for the claimed invention. No new matter has been added.

Applicant acknowledges with appreciation the Examiner's allowance of claims 1-5 and 19-22 and the finding that claims 9-11 and 15-17 contain allowable subject matter. Applicant amends claims 9 and 15 to independent form, incorporating all features of their respective base claims. Accordingly, Applicant respectfully requests that the Examiner allow claims 9-11 and 15-17. Applicant further submits that the provided reasons for allowability include only the Examiner's interpretation, which should in no way limit the scope of the allowable claims.

Claims 6-8 and 12-14 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 6,429,815 to Soliman in view of U.S. Patent No. 5,495,257 to Loomis. Applicant amends base claims 6 and 12 in a good faith effort to clarify the invention as distinguished from the cited references, and respectfully traverses the rejection.

Loomis describes a method for determining spatial location and clock bias coordinates with enhanced accuracy for a mobile user station that is part of a GPS system. The mobile station 11 includes a receiver/processor 15 that receives satellite signals from M satellites (21, 23, 25, 27) and determines uncorrected spatial location and clock bias coordinates $[x, y, z, b]_{unc}$ for the mobile station 11. The mobile station 11 transmits its uncorrected coordinate values $[x,$

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y, z, b]_{unc} to the reference station 31. The reference station 31 includes a receiver/processor 35 that receives satellite signals from the same M satellites (21, 23, 25, 27). The reference station 31 determines a pseudo-range correction matrix based on its own known reference station coordinates, i.e., location and time of measurement, and the satellite signals received from the satellites 21, 23, 25, 27. The reference station 31 receives the uncorrected coordinates [x, y, z, b]_{unc} from the mobile station 11 and determines, via a series of matrix equations, corrected location coordinates and clock bias for the mobile station 11. The reference station 31 transmits the corrected coordinates [x, y, z, b]_{cor} to the mobile station 11. Figs. 1 and 2, col. 4, lines 16-44, and col. 7, line 59 to col. 8, line 21 of Loomis.

Soliman describes that in a GPS system, a base station—i.e., a reference station—may have “stored information regarding the street width and height of the surrounding buildings.” Col. 10, lines 23-44 of Soliman. Soliman also describes that in one embodiment, its wireless communication device can have several modes of operation, including inverted DGPS mode. Col. 4, lines 40-49 of Soliman.

The Examiner relied upon Soliman as alleged disclosure of the obstacle information storage features of the claimed memory and relied upon Loomis as alleged disclosure of the satellite information collation and the measured position correction by the claimed reference station.

Even assuming, arguendo, that it would have been obvious to one skilled in the art at the time the claimed invention was made to combine Loomis and Soliman, the combination would, at most, have suggested a reference station correcting coordinates of a mobile station based on signals received from the same satellites. The combination would, thus, have failed to disclose or suggest the claimed feature of a result of collation indicating an unreliable measured position

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when a reference station receives a signal from satellites that are different from those from which a mobile station receives a signal.

In other words, Loomis and Soliman, as cited and relied upon by the Examiner, fail to disclose or suggest,

“[a] position measuring apparatus mounted in a fixed reference station, for estimating a position of a mobile station moving in an area in communication with the fixed reference station, comprising:

a memory for storing position information relating to an obstacle;

a receiver for receiving position information of the mobile station that has been measured by the mobile station based on signals from a plurality of GPS satellites, and for receiving mobile station satellite information indicating at least one of the satellites from which the mobile station has received a signal;

a collator for collating reference station satellite information indicating at least one of the satellites from which the reference station has received a signal, with the mobile station satellite information, wherein a result of the collation indicates a reliable measured position if said satellites from which the mobile station received a signal are the same as said satellites from which the reference station received a signal, and an unreliable measured position if said satellites from which the mobile station received a signal are not the same as said satellites from which the reference station received a signal; and

a correction unit for correcting the measured position of the mobile station based on a result of the collation and coordinates of the obstacle,” as recited in claim 6. (Emphasis added)

Accordingly, Applicant respectfully submits that claim 6, together with claims 7-8 and 23 dependent therefrom, is patentable over Loomis and Soliman, separately and in combination, for at least the above-stated reasons. Claim 12 incorporates features that correspond to those of claim 6 cited above and is, therefore, together with claims 13-14 and 24 dependent therefrom, patentable over the cited references for at least the same reasons.

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Claim 18 stands rejected under 35 U.S.C. 102(b) as being anticipated by U.S. Patent No.

6,331,836 to Jandrell, and under 35 U.S.C. 102(a) as being anticipated by U.S. Patent

Application Publication No. 2005/0033515 to Bozzone. Applicant amends claim 18 in a good faith effort to clarify the invention as distinguished from the cited references, and respectfully traverses the rejections.

Jandrell describes position-tracking signals as being unreliable when views of the sky—and, thus, direct line-of-sight with GPS satellites—are frequently obstructed. Bozzone describes a personal tracking system in which readings from a pedometer and electronic compass are used to provide position information in situations where GPS coordinate information is not available or not reliable due to, for example, low signal strengths from the GPS satellites or the inability to obtain an accurate signal from within urban canyons.

Therefore, neither Jandrell nor Bozzone discloses the claimed feature of correcting a measured position of an apparatus to a corrected position closer or within an area, where there is no obstacle between a satellite and the apparatus, when the measured position is determined to be lower in reliability.

In other words, neither Jandrell nor Bozzone, as cited and relied upon by the Examiner, discloses,

“[a] position measuring apparatus for measuring a position of the apparatus using signals received from a plurality of satellites, comprising obstacle reflecting means containing obstacle information, characterized in that

if the apparatus cannot receive a signal from one of the satellites or quality of a received signal is lower than a predetermined value, the apparatus determines that the apparatus is not positioned in an area where there is no obstacle between the satellite and the apparatus, or determines that reliability for the measured position of the apparatus is lower than that in a case where the apparatus is positioned in said area,

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the position measuring apparatus further characterized in that if the reliability is determined as lower, then coordinates of the measured position are corrected to a corrected position closer or within said area," as recited in claim 18. (Emphasis added)

Accordingly, Applicant respectfully submits that claim 18 is patentable over both Jandrell and Bozzone for at least the above-stated reasons.

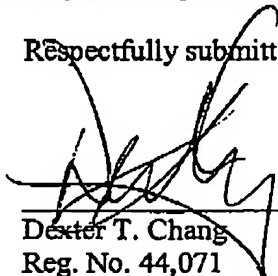
The above statements on the disclosures in the cited references represent the present opinions of the undersigned attorney. The Examiner is respectfully requested to specifically indicate those portions of the respective reference that provide the basis for a view contrary to any of the above-stated opinions.

Applicant appreciates the Examiner's implicit finding that the additional references made of record, but not applied, do not render the claims of the present application unpatentable, whether these references are considered alone or in combination with others.

In view of the remarks set forth above, this application is in condition for allowance which action is respectfully requested. However, if for any reason the Examiner should consider this application not to be in condition for allowance, the Examiner is respectfully requested to telephone the undersigned attorney at the number listed below prior to issuing a further Action.

Any fee due with this paper may be charged to Deposit Account No. 50-1290.

Respectfully submitted,


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